

Claims

1. A water filtration device comprising: a water filter; a chamber; a passageway communicating between said chamber and said filter; a gate residing in said chamber; said gate swinging between a first position and a second position; and, a gate position
5 sensor.

2. A water filtration device as claimed in claim 1 wherein said sensor measures the time said gate is in said second position.

3. A water filtration device as claimed in claim 2 wherein said sensor performs an algorithm totalizing the flow of filtered water through said device.

10 4. A water filtration device as claimed in claim 3 wherein said algorithm totalizes flow rate times time.

5. A water filtration device as claimed in claim 4 further comprising an indicator for displaying performance of said filter.

15 6. A water filtration device as claimed in claim 3 further comprising an indicator for displaying performance of said filter.

7. A water filtration device as claimed in claim 2 further comprising an indicator for displaying performance of said filter.

20 8. A single use water filtration device comprising: a front housing connectable to a water faucet; a filter housing having an inlet and an outlet; said front housing non-removably affixed to said filter housing; a water filter non-removably contained within said filter housing; and, said housing includes a chamber in communication with said

filter.

9. A single use water filtration device as claimed in claim 8 wherein said outlet resides in said chamber.

10. A single use water filtration device as claimed in claim 8 further comprising a
5 second outlet residing in said chamber.

11. A single use water filtration device as claimed in claim 8 wherein said filter diameter is less than or equal to 1.6 inches.

12. A single use water filtration device as claimed in claim 8 wherein said filter diameter is less than or equal to 2.2 inches.

10 13. A single use water filtration device as claimed in claim 8 wherein said filtration device is faucet mounted and wherein said filter resides rearwardly of said faucet.

14. A single use water filtration device comprising a filter subassembly residing in a filter housing; said filter subassembly comprising a filter and end caps affixed to said
15 filter, said end caps of said filter each comprise peripheral seal portions for sealing said filter subassembly ensuring that water flows into and through said filter.

15. A single use water filtration device as claimed in claim 14 wherein each of said peripheral seal portions include soft plastic engaging said filter housing.

16. A single use water filtration device as claimed in claim 14 wherein each of
20 said peripheral seal portions comprise two radially extending walls in engagement with said filter housing and an elastomeric O-ring seal extending between said walls and

extending around the circumference of said peripheral seal portions of said end caps.

17. A single use water filtration device comprising; a filter housing having an inlet, a first outlet and a second outlet; a water filter contained within said housing; said housing includes a chamber in communication with said filter; said first and second
5 outlets residing in said chamber; said second outlet includes a valve seat; and, a valve interposed in said housing and being operable against said valve seat of said second outlet for controlling the flow out of said second outlet.

18. A water filtration device as claimed in claim 17 wherein said valve includes a plunger and an elastomeric ball valve.

10 19. A water filtration device as claimed in claim 18 wherein said plunger includes a foot and said ball valve resides over said foot.

20. A water filtration device as claimed in claim 19 wherein said foot of said plunger and said elastomeric ball valve resides within said housing.

21. A water filtration device as claimed in claim 20 further comprising a handle
15 pivotally affixed to said housing and engaging said plunger such that when said plunger is depressed said elastomeric ball valve moves inwardly toward the center of said housing and away from said seat of said outlet.

22. A water filtration device as claimed in claim 21 wherein a spring is interposed between said plunger and said filter housing urging said elastomeric ball valve against the
20 valve seat of said second outlet.

23. A single use water filtration device comprising; a filter housing having an inlet

and an outlet; a water filter non-removably contained within said housing; said filter housing includes a chamber in communication with said water filter; said outlet residing in said chamber; a front housing having first and second passageways non-removably affixed to said filter housing; a directional valve residing within said front housing and
5 movable therein for directing water into said filter or through said front housing.

24. A single use water filtration device as claimed in claim 23 wherein said front housing is ultrasonically welded to said filter housing.

25. A single use water filtration device as claimed in claim 24 wherein said front housing is welded by a welding device selected from the group of microwave, radio
10 frequency (RF), heat and induction welding devices.

26. A water filtration device comprising: a water filter housing having an inlet and an outlet; said water filter housing includes an end cap; a wet chamber formed within said water filter housing; a water filter non-removably contained within said water filter housing; a passageway communicating between said wet chamber and said water filter; a
15 gate having a magnet affixed thereto resides in said chamber; said gate swinging between a first position and a second position; a gate position sensor resides in said end cap of said water filter housing; and, said gate position sensor being actuated when said gate swings to said second position and said magnet is in proximity to said sensor.

27. A water filtration device as claimed in claim 26 further comprising electronics
20 and a light emitting diode; said electronics output a signal to said light emitting diode which indicates the performance of the water filtration device.

28. A water filtration device as claimed in claim 26 wherein said water filter is affixed to a first end cap and a second end cap; and, said first end cap of said filter includes a first hinge member and said gate includes a second hinge member which coacts with said first hinge member to enable said gate to swing between said first and second positions.

29. A single-use water filtration device comprising: a filter housing; a front housing ultrasonically welded to said filter housing; a filter; and, a first end cap and a second end cap; said filter non-removably contained within said first and second end caps.

30. A single-use water filtration device as claimed in claim 29 wherein said housing includes at least one inlet and at least one outlet and wherein said front housing includes a diverter valve for directing unfiltered water into the filter housing for filtering or through the housing for use of the unfiltered water.

31. A single-use water filtration device as claimed in claim 29 wherein said front housing includes a continuous periphery and said continuous periphery is ultrasonically welded to said filter housing.

32. A single-use water filtration device as claimed in claim 31 wherein said filter housing includes a recess whose shape is the reciprocal of said continuous periphery of said front housing and said continuous periphery of said front housing fits within said recess in said filter housing.

33. A single-use water filtration device as claimed in claim 29 wherein said filter

housing includes at least one protrusion which interengages a corresponding aperture in said front housing.

34. A single-use water filtration device as claimed in claim 29 further comprising a filter housing end cap ultrasonically welded to said filter housing.

5 35. A single-use water filtration device as claimed in claim 34 wherein said filter housing end cap includes at least one spacer which spaces one of said filter end caps apart from said housing end cap.

36. A single-use water filtration device as claimed in claim 34 wherein said filter housing end cap includes a closed end and an open end.

10 37. A single-use water filtration device as claimed in claim 36 further comprising a gate pivotally mounted to said one of said filter end caps; said gate includes a magnetic portion; a sensor, electronics associated therewith and a filter performance indicator, mounted in said open end of said filter housing end cap; a filter housing end plate affixed to said filter housing end cap; said gate swinging from a first position to a second position
15 actuating said sensor; and, said electronics outputting a signal to an indicator of the performance of the filter.

38. A single-use water filtration device as claimed in claim 30 wherein said filter housing includes a second outlet having a valve seat, and wherein said water filtration device includes a valve operable against said seat of said second outlet.

20 39. A single-use water filtration device as claimed in claim 38 further comprising a spring and a plunger; said spring operable between said filter housing and said plunger;

said plunger extending through said second outlet of said filter housing and said valve affixed to said plunger; said spring urging said valve against said valve seat; and, said valve being unseated when said plunger is urged against the force of said spring.

40. A single-use water filtration device as claimed in claim 39 further comprising
5 an end cap of said filter housing and a lever pivoted on said end cap of said filter housing; and, said lever being in engagement with said plunger and depressing said plunger when pushed by hand.

41. A single-use water filtration device as claimed in claim 40 further comprising a fountain head rotatably secured in said plunger.

42. A single-use water filtration device comprising: a filter housing; a front
10 housing affixed to said filter housing; a filter; a first end cap and a second end cap; said filter affixed to said first and second end caps; said filter and said end caps residing within said filter housing; said filter housing having at least one inlet and a first and second outlet for expelling filtered water; and, said front housing includes an adapter for
15 connecting and disconnecting to and from, respectively, a water faucet and said front housing further includes an outlet for unfiltered water.

43. A single-use water filtration device as claimed in claim 42 wherein said filter is carbon activated and includes a filter pre-wrap.

44. A water filtration device having an outlet fountain comprising: a filter; a
20 generally cylindrically shaped filter housing having a wall defining said filter housing; said wall defines the interior and exterior of said filter housing and said wall includes an

interior and exterior portion thereof; said filter housing includes an inlet and an outlet each of which extend through said wall; a plunger having a foot, said plunger extending through said wall of said filter housing such that said foot of said plunger resides interiorly within said wall of said filter housing; a valve mounted on said foot of said plunger; a spring operable between said exterior of said wall and said plunger urging said plunger and said foot of said plunger in a direction away from said interior of said filter housing and toward said exterior of said filter housing; said outlet of said filter housing includes a valve seat on said interior portion of said wall; and, said valve urged away from said valve seat when said plunger is depressed against the force of said spring expelling filtered water from said fountain.

45. A water filtration device having an outlet fountain as claimed in claim 44 further comprising a lever pivotally mounted on said filter housing and engaging said plunger; a fountain head rotatably secured to said plunger; and, said valve urged away from said valve seat when said lever and plunger are depressed against the force of said spring expelling water from said fountain.

46. A water filtration device having an outlet fountain as claimed in claim 44 wherein said valve is elastomeric.

47. A water filtration device having an outlet fountain as claimed in claim 45 wherein said valve is elastomeric.

48. A water filtration device having an outlet fountain as claimed in claim 44 wherein said filter housing includes a chamber and said outlet is in communication with

said chamber and wherein said valve is elastomeric.

49. A water filtration device having an outlet fountain as claimed in claim 45 wherein said filter housing includes a chamber and said outlet is in communication with said chamber and wherein said valve is elastomeric.

5 50. A water filtration device having an outlet fountain as claimed in claim 44 wherein said plunger includes a passageway therein and wherein said outlet fountain is rotatably mounted in said passageway of said plunger.

51. A water filtration device having an outlet fountain as claimed in claim 45 wherein said plunger includes a passageway therein and wherein said outlet fountain is
10 rotatably mounted in said passageway of said plunger and in said lever.

52. A water filtration device as claimed in claim 1 wherein said filter is a carbon-based filter.

53. A water filtration device as claimed in claim 8 wherein said filter is a carbon-based filter.

15 54. A water filtration device as claimed in claim 44 wherein said filter is a carbon based filter.

55. A single-use faucet-mounted water filtration device comprising: a filter housing having an outlet for expelling filtered water therefrom; a front housing ultrasonically and non-removably affixed and welded to said filter housing; said filter
20 housing residing rearwardly with respect to said faucet; a filter non-removably contained within said filter housing; said front housing includes an inlet and an adapter for

connecting said inlet of said front housing of said water filtration device to said faucet for use of said filter and for disconnecting said water filtration device from said faucet for disposal when said filter is spent; said front housing includes a diverter for directing water into said filter or bypassing said filter; and, a gate, sensor and electronics, in combination, for measuring and indicating totalized flow through said water filtration devices.

56. A single-use faucet-mounted water filtration device as claimed in claim 55 wherein said filter housing includes a second outlet having a fountain for expelling filtered water therefrom; and, further comprising, a valve for controlling flow from said second outlet having a fountain.

57. A method of making a water filtration device comprising the steps of:

- attaching end caps to said filter;
- inserting said filter within a filter housing;
- aligning said filter within said filter housing;
- inserting a portion of a gate into corresponding receptacles on one end of one of said end caps previously affixed to said filter;
- inserting a sensor and electronics into an open end of a filter housing end cap;
- affixing said filter housing end cap to said filter housing forming a chamber between a closed end of said filter housing end cap and said one end of said end caps;
- and,
- affixing a front housing to said filter housing.

58. A method of making a water filtration device as claimed in claim 57: wherein

said step of attaching end caps to said filter is performed with adhesive; and, wherein said steps of affixing said filter housing end cap to said filter housing and affixing said front housing to said filter housing are performed by an ultrasonic welding process.

5 59. A method of making a water filtration device as claimed in claim 57 further comprising the step of securing a filter pre-wrap to a filter.

60. A filter performance indicator comprising: a gate; said gate rotatable between first and second positions; a magnet; said magnet affixed to said gate; a switch; said magnet opening and closing said switch; and, an electric circuit for measuring the time when said switch is closed. 13

10 61. A filter performance indicator as claimed in claim 60 wherein said electric circuit is an integrated circuit.

62. A filter performance indicator as claimed in claim 60 wherein said switch is a reed switch.

15 63. A filter performance indicator as claimed in claim 60 wherein said electric circuit has three discrete outputs.